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EMOTIONAL INTELLIGENCE IN STUDYING CLINICAL COMMUNICATION IN ENGLISH

JAPANESE MEDICAL STUDENT'S EMPATHY, MOTIVATION, SELF-AWARENESS, AND SELF-REGULATION

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Abstract— **This research studied the dynamics of Japanese medical students' emotional intelligence (EI) improved by studying medical history-taking in English during English for Medical Purposes (EMP) classes. The aims of this research are (1) to explore the dynamic structures of medical students' EI in studying history-taking in English; (2) to examine how the EI improved by studying history-taking in English will influence student's empathy and test anxiety concerning other medical subjects; and (3) to study self-regulation of students with high academic achivement. Native Japanese speaking undergraduate medical students (*N* = 67) in Japan participated in this study. After the participants studied patient-centred history-taking through English, which was their second language, for three months, their EI (i.e. empathy, motivation to study EMP, self-awareness, and self-regulation) were assessed by two questionnaires. Explanatory factor analysis across the data showed that Japanese medical students' EI are explained by three factors: (1) self-awareness of confidence and anxiety during lecture and test (EMP and medical subjects); (2) motivation in EMP and empathy; and (3) self-awareness of confidence in English proficiency. In addition, multiple regression analyses indicated that their improved confidence in English proficiency throughout learning history-taking in English correlated with increasing empathy for patients and decreasing test anxiety in medical education. Moreover, open-ended questionnaire suggested that students with high academic achievements keep higher self-regulation to manage their anxiety and regard anxiety as a vital factor in maintaining motivation for further study in medical education. The study suggests pedagogical implications to develop further curriculum and course materials for undergraduate medical education.**

Keyword— **Emotional intelligence, English for Medical Purposes (EMP), empathy, medical education, motivation, self-regulation..**

I. INTRODUCTION

Emotional intelligence (EI) is a complex and multifaceted process, which consisted of emotional and cognitive abilities [1]. In healthcare context, the EI is related to professional performance and contributed to improve doctor-patient relationships [2]. In medical education, the EI is one of vital factors to improve medical students' professionalism [3] and empathy [4]. It has been claimed that medical educators have responsibility to provide academic training for medical students to develop their EI [5] and a number of curriculum have been designed to improve medical students' EI [6]. However, little studies have focused on the emotional structure of Japanese medical student's EI during clinical communication. In addition, it has not discussed yet how their EI improved by studying clinical communication in English as second language will influence on their studying medical subject in the future.

Therefore, focusing on studying history-taking in English at undergraduate level, the present study examines the dynamic structures of Japanese medical students' EI in studying clinical communication in English and researches how their EI improved by clinical communication influence on studying medical subjects.

II. PREVIOUS REVIEW

A. Emotional intelligence in medical education

Emotional intelligence (EI) is introduced as "emotional self-assessment, self-expression assessment, identification of other's emotion for emotional self-regulation, and the use of emotion to facilitate performance" [1, 7]. Recent study defined the EI as "the capacity of recognizing our own feeling and those of others, for motivating ourselves, and for managing emotions both in us and in our relationships", indicating that the EI includes self-awareness, self-regulation, motivation, and empathy [8].

It has not researched yet how medical student's EI (i.e. self-regulation, self-awareness, motivation and empathy) form the emotional structure in studying clinical communication in English. In addition, it has not discussed yet how their EI improved by studying clinical communication in English will influence on their studying medical subject in the future. Thus, this study examines the emotional structure of medical

students' EI in studying clinical communication and the influence on studying in medical education.

B. Empathy as student doctors

Empathy is considered a vital cognitive ability in healthcare professionals [9]. In particular, history-taking with high empathy contributes not only to establishing a physician-patient relationship but also to improving the quality of information the patients provide, which subsequently improves the quality of history-taking [9]. A number of studies have researched medical students' empathy and revealed that it decreases over the course of their undergraduate course [10, 11]. Further research is still required as to whether studying clinical communication, such as history-taking in English, during an undergraduate course subsequently contributes to maintaining and improving students' empathy, which is one factor of the EI.

C. Self-awareness of confidence and anxiety in studying

Recent study mentioned that EI and academic motivation are correlated positively [12], indicating that a set of learners' self-efficacy, anxiety, and stress in studying influence on their academic motivation, success, and failure [13,14].

Self-efficacy is a social cognitive factor, which defined by Bandura as "one's belief in one's ability to succeed at tasks" [15]. The self-efficacy is related to the learner's confidence and considered as one of vital factors to influence academic performance and success [16] and cross-cultural research studies have examined the differences in anxiety and self-efficacy in studying across different countries.

The Organization for Economic Co-operation and Development (OECD) has conducted the Programme for International Student Assessment (PISA) every three years to internationally research 15-year-old students' academic literacies (math, reading, and science), background, and affective factors in learning such as anxiety, self-concept, and self-efficacy. The PISA reports show that students in Japan achieved the highest scores in all literacies [17]. However, as Lee (2009) indicated, students in Japan showed the lowest self-concept and self-efficacy, and the highest anxiety in learning despite their highest academic proficiencies [18]. However, it has not yet been investigated why this is so, even though students with high academic proficiency in Western countries generally showed higher self-concept and self-efficacy and lower anxiety. In addition, it has not investigated how Japanese medical students aware their anxiety and confidence, neither how their awareness of anxiety and confidence will influence further study and academic achievements.

As one factor of EI, this study investigates medical students' self-awareness as well as their motivation, empathy, and self-regulation, examining (1) Japanese medical students' self-awareness of confidence and anxiety in studying clinical communication and (2) the influence on studying medical subjects.

III. Purpose of this study

The purpose of this study is to research the structure of Japanese medical students' EI (i.e. empathy, motivation to study, self-regulation, and self-awareness.) The research questions are (a) how students' EI form affective structures in studying clinical communication in English; (b) how the affective structures developed by studying history-taking as EMP influence their empathy and anxiety in medical education; and (c) self-regulation of students with higher academic achievement in clinical communication.

IV. Method

A. Particilants

First- and third-year undergraduate medical students at Kyorin University (N = 67) participated in this study. All participants are studying English as their second language (ESL) in Japan. This EMP course was first experience of studying history-taking in English for all participants. The purpose of this study was explained to them and they signed informed consent forms.

B. Procedure

First, all participants studied patient-centred history-taking in English for three months during EMP in their undergraduate course. After the three months of EMP lectures, they were asked to answer two kinds of questionnaire (a Likert scale questionnaire and an open-ended questionnaire), with the aim of assessing their EI. The items of the Likert scale questionnaire were developed based on the PISA report [17] and statistical analyses were performed to research the structures of students' empathy, motivation, and self-awareness of confidence and anxiety. The self-regulation was assessed based on the open-ended questionnaire.

C. Analyses

Two statistical analyses were performed with SPSS version 20. First, exploratory factor analysis (EFA) was conducted across the questionnaire data with the aim of revealing the structure among EI. Second, multiple regression analyses were conducted to examine the relation between the factors produced in the EFA, empathy as student doctors, and test anxiety in studying medical education in the following semester.

V. Result

First, EFA across the data of motivation, empathy, and self-awareness of anxiety and confidence was performed. Using the Kaiser-Guttman eigenvalue greater-than-1 criterion, the scree plot, the EFA produced a three-factor solution, labelled factor 1: self-awareness of confidence and anxiety during lecture and test (EMP and medical subjects); factor 2: motivation in EMP and empathy; and factor 3: self-awareness of confidence in English proficiency (see Table 1).

Next, multiple regression analysis across the three factors produced in the EFA and test anxiety of medical subjects (TA-

ms) were performed, setting the factors produced in the EFA as independent factors and the TA-ms as the dependent factor, respectively. The results showed that factors 1 and 3 significantly correlate with TA-ms (see Table 2).

TABLE 1.
Three factors of dynamic structure of medical students' EI

Items	Promax rotated factors		
	Factor		
	1	2	3
I feel confidence about my answer at test of history-taking.	0.684		
I do not worry that it will be difficult for me to understand lectures of history-taking.	0.669		
I do not get nervous answering at test of history-taking.	0.664		
I do not get nervous answering at test of medical subjects.	0.646		
In lectures of history-taking, I believe I can understand even the difficult work.	0.620		
Generally, I feel confidence about my answers during test-taking.	0.574		
I do not worry that lecturers in the next year will be difficult for me to understand.	0.553		
I believe I get good grade in Medical English at the end of term.	0.452		
Generally, I believe I can manage anxiety during studying.	0.449		
I believe I will collect information correctly during history-taking in the future.	0.411		
I am motivated to study medical communication in English to work with co-workers with various linguistic backgrounds.		0.877	
I am interested in studying conversation in history-taking.		0.730	
I want to communicate in English in the future because I want to make patients, who do not understand Japanese, be reassured.		0.654	
I am motivated to improve reading proficiency in English.		0.528	
I am motivated to improve writing proficiency in English.		0.521	
I believe I will listen patient's complaint with empathy.		0.491	
I can understand English quickly.			0.715
I am good at English.			0.683
I believe that English is one of my best subjects.			0.661
α	0.853	0.799	0.796
Rotated factor correlation			
With factor 2	0.299*		
With factor 3	0.391**	0.288*	

$^{*}p < 0.05$, $^{**}p < 0.001$
α: Cronbach Alpha if item delated
Note. Factors loading smaller than 0.30 are not shown in this table.

Another multiple regression analysis was conducted with the factors formed in the EFA as independent factors and empathy as a medical student as a dependent factor. It showed that the factor 2 was negatively correlated with empathy, although factor 3 was positively correlated (see Table 2).

TABLE 2.
Three-factored dynamic structure, anxiety in studying medical subjects, and empathy as student doctors

	Test anxiety (medical subjects)	Empathy
	β	β
Factor 1	-0.569***	-0.281
Factor 2	0.001	-0.316*
Factor 3	0.316*	0.325*
R^2	0.217*	0.177**

$^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$
β: standard partial regression coefficient

VI. Discussion

The overreaching goal of the present study is (a) to examine how students' EI structure is formed by empathy, motivation, and self-awareness; (b) to research how the EI structures improved by studying history-taking in EMP influence student's empathy and further learning in medical education; and (c) to explore the self-regulation of students with higher academic achievement in learning clinical communication.

First, this study showed that students' empathy, motivation, and self-awareness in studying EMP are explained in a three-factored dynamic structure: (1) self-awareness of confidence and anxiety during lecture and test (EMP and medical subjects); (2) motivation in EMP and empathy; and (3) self-awareness of confidence in English proficiency.

Second, the three-factored affective structure explains both test anxiety in further medical education and empathy as student doctors. The multiple regression analyses suggest that students, who are studying history-taking with less confidence and higher anxiety, believe that they will feel less anxiety during taking tests of medical subjects in the future.

Interestingly, in the open-ended questionnaire, students with higher academic achievement in history-taking in English described that learning anxiety is a vital factor to motivate further study, while students with poor academic achievement did not mention so. This suggests that the students with higher academic achievement in history-taking in English have self-regulation skills to manage anxiety in studying clinical communication and EMP. Moreover, it implies that it is not critical whether students have anxiety or not, but managing their own anxiety during learning is a vital factor to improve their academic achievements. Further studies are required to research how self-regulation of anxiety across students influences their academic achievements and how metacognition of anxiety can be improved in medical education.

Third, the correlation between factor 2 and empathy implies that, although students have not been highly motivated to study EMP, their empathy as student doctors can be increased throughout studying history-taking in English during the undergraduate course. It suggests that the EMP program to study history-taking in English is effective to improve undergraduate medical students' empathy.

VII. CONCLUSION

This study shows that Japanese medical students' EI structure is explained by three factors: (1) self-awareness of confidence and anxiety during lecture and test (EMP and medical subjects); (2) motivation in EMP and empathy; and (3) self-awareness of confidence in English proficiency. It suggests that studying history-taking in English during undergraduate course contributes to improving Japanese undergraduate students' empathy and decreasing their anxiety in test-taking in medical education. Moreover, Japanese medical students with higher academic achievement in history-taking in English regards learning anxiety as a vital factor to motivate further study and academic achievement. Although further researches are needed to examine the difference between first- and third year students, this study suggests that studying history-taking at an early stage of the undergraduate course is effective at improving their empathy and decreasing test anxiety during the undergraduate course.

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IX. CONFLICTS OF INTEREST

The author declares that there is no competing interests.

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